

## 28818 - Electronic Technology I

### Syllabus Information

**Academic year:** 2024/25

**Subject:** 28818 - Electronic Technology I

**Faculty / School:** 175 - Escuela Universitaria Politécnica de La Almunia

**Degree:** 424 - Bachelor's Degree in Mechatronics Engineering

**ECTS:** 6.0

**Year:** 2

**Semester:** Second semester

**Subject type:** Compulsory

**Module:**

### 1. General information

The general objective of the subject is to provide the necessary knowledge to interpret and solve analog electronic circuits, especially in the areas of operational amplifiers and power supplies.

This requires the correct use of the most common computer applications for circuit simulation, power supply and measurement instrumentation commonly used in an electronic laboratory and the correct interpretation of the technical documentation of the components used.

### 2. Learning results

- Interpret and solve analog and digital electronic circuits.
- Acquire programming skills in  $\mu\text{P}$ .
- To know sensor and transducer typologies.
- Master simulation tools and basic laboratory instruments.
- Understand and interpret commercial equipment documentation.
- Drawing and interpreting plans and diagrams according to the appropriate standards and symbology.

### 3. Syllabus

**Contents of the subject indispensable for the achievement of the learning results.**

**Theoretical Contents:**

The theoretical contents are divided into two blocks preceded by an introductory block 0. The choice of the content of the blocks has been made seeking the express clarification of the terminal objective, so that, with the union of incident knowledge, the student obtains a structured knowledge, easily assimilated by the Mechatronics Engineers.

Each of the blocks is made up of topics, with a time allocation of one or two weeks of the subject.

The topics are:

**Block 0: INTRODUCTION**

**0.- Passive electronic components**

**Block 1: DIODES, TRANSISTORS AND APPLICATION CIRCUITS**

**1.- Semiconductors and diodes**

**2.- Circuits with diodes**

**3.- BJT Transistors and Circuits with BJT Transistors**

**4.- FET Transistors and Circuits with FET Transistors**

**Block 2: OPERATIONAL AMPLIFIERS**

**5.- Operational Amplification**

**6.- Linear Circuits with Operational Amplifiers**

**7.- Nonlinear Circuits with Operational Amplifiers**

**8.-Converters and active filters**

**Topic 9: Power supplies.**

It will be developed during the entire subject, as the agenda evolves.

**Practical Contents:**

Each block described in the previous section has practical exercises associated, by means of practical assumptions and/or physical or simulated assembly works, leading to obtaining the results and their analysis and interpretation.

#### 4. Academic activities

- Theoretical classes: The theoretical concepts of the subject will be explained and practical examples will be developed.
- Types of problems: The teacher solves problems or case studies for illustrative purposes. This type of teaching complements the theory presented in the lectures with practical aspects.
- Tutored problem solving: Students will develop examples and carry out practical problems or cases related to the theoretical concepts studied.
- Laboratory Practices: The total group of theory classes may or may not be divided into smaller groups, as appropriate. The students will perform assemblies, measurements, simulations, etc. in the laboratories in the presence of the practical teacher.
- Tutored autonomous activities: These activities will be tutored by the teachers of the subject.
- Reinforcement activities: Through Moodle, various activities will be conducted to reinforce the basic contents of the subject. Its performance will be monitored through the same.

#### 5. Assessment system

The members of the student body will be able to choose the following evaluation modalities:

##### **Continuous evaluation:**

The subject is divided into two thematic blocks. The students who opt for this mode of evaluation may take a partial test, corresponding to block 1 of the subject. This evaluation test will take place throughout the term. Those members of the student body who achieve a minimum grade of 4 points will be able to promote this block until the ordinary exam.

The students who have reached the minimum grade of 4 points in the first partial, will be able to take the evaluation test corresponding to block 2 of the course on the day of the ordinary exam. In case of not having reached the minimum grade, students will have to take the evaluation test corresponding to blocks 1 and 2 together.

Partial	Ordinary Call	Grading Theoretical-Practical Written Exams
Grade for Partial Test Block 1 $\geq 4$	Grade for Partial Test Block 2	Grade Block 1 (50%) + Grade Block 1 (50%) [grade $\geq 4$ for averaging]
Grade for Partial Test Block 1 $< 4$	Grade Test Blocks 1 and 2	Grade Test Blocks 1 and 2 [grade $\geq 4$ for averaging].

The specific weight of the theoretical-practical and laboratory practical tests is shown in the following table:

Grading Written Tests	Theoretical-Practical Grading Laboratory Practices
70% [grade $\geq 4$ for averaging]	30% [grade $\geq 4$ for averaging]

To qualify for this evaluation mode, students must attend 80% of the practical sessions.

Students who have not passed the course, but have achieved a minimum grade of 4 points in the laboratory practices, will be able to promote this grade to the ordinary and extraordinary exams.

To pass the course a grade of 5 points must be achieved and a minimum of 4 points must be obtained in each of the parts.

##### **Global Test**

It will consist of a single written test that will contain theoretical and practical questions related to the syllabus of the subject and to the laboratory practices.

The specific weight of the questions in each of the parts will be, needing to obtain a grade of 4 points out of 10 in each of them to average:

Percentage	
Written test theoretical-practical part	70 % [grade $\geq 4$ for averaging]
Written test laboratory practical part	30 % [grade $\geq 4$ for averaging]

To pass the course a grade of 5 points must be achieved and a minimum of 4 points must be obtained in each of the parts.

## 6. Sustainable Development Goals

- 4 - Quality Education
- 5 - Gender Equality
- 9 - Industry, Innovation and Infrastructure